

Supplementary Table S1. Mortality rate of *Clostridium difficile* diarrhea in 1990 and 2021 in GBD regions, with AAPC from 1990 to 2021

Location	Rate_1990	Rate_1990UI*	Rate_2021	Rate_2021UI	AAPC of Rate	AAPC of Rate 95%UI
Andean Latin America	0.01	(0.01-0.02)	0.02	(0.01-0.02)	1.1	(0.8-1.3)
Australasia	0.17	(0.12-0.22)	0.22	(0.18-0.27)	1.1	(0.6-1.4)
Caribbean	0.01	(0.01-0.01)	0.01	(0.01-0.02)	0.9	(0.6-1.1)
Central Asia	0.05	(0.04-0.07)	0.05	(0.04-0.07)	0.1	(0-0.3)
Central Europe	0.18	(0.16-0.19)	0.36	(0.29-0.45)	2.1	(1.8-2.4)
Central Latin America	0.02	(0.01-0.03)	0.03	(0.02-0.05)	1.3	(1.1-1.4)
Central Sub-Saharan Africa	0.04	(0.03-0.06)	0.05	(0.03-0.07)	0.6	(0.6-0.7)
East Asia	0.02	(0.01-0.03)	0.02	(0.01-0.03)	0.8	(0.7-0.9)
Eastern Europe	0.10	(0.08-0.13)	0.10	(0.08-0.11)	0.4	(0.1-0.7)
Eastern Sub-Saharan Africa	0.04	(0.02-0.05)	0.05	(0.03-0.07)	0.8	(0.8-0.9)
Global	0.10	(0.08-0.11)	0.19	(0.16-0.23)	2.3	(2.1-2.4)
High-income Asia Pacific	0.19	(0.15-0.25)	0.22	(0.17-0.28)	0.5	(0.3-0.6)
High-income North America	0.18	(0.16-0.19)	1.16	(1.04-1.27)	6.0	(5.9-6.2)
High-middle SDI	0.09	(0.07-0.1)	0.11	(0.09-0.14)	1.0	(0.7-1.3)
High SDI	0.19	(0.16-0.22)	0.53	(0.47-0.61)	3.4	(3.2-3.5)
Low-middle SDI	0.02	(0.01-0.03)	0.02	(0.02-0.04)	1.0	(0.9-1.1)
Low SDI	0.03	(0.02-0.04)	0.03	(0.02-0.05)	0.8	(0.7-0.8)
Middle SDI	0.02	(0.01-0.03)	0.02	(0.02-0.03)	0.7	(0.6-0.7)
North Africa and Middle East	0.02	(0.01-0.02)	0.03	(0.02-0.04)	1.4	(1.4-1.5)
Oceania	0.02	(0.01-0.03)	0.03	(0.02-0.04)	0.3	(0.3-0.4)
South Asia	0.02	(0.01-0.02)	0.02	(0.01-0.03)	1.3	(1.2-1.4)
Southeast Asia	0.02	(0.01-0.03)	0.02	(0.01-0.03)	0.3	(0.3-0.3)
Southern Latin America	0.07	(0.05-0.09)	0.12	(0.09-0.15)	1.8	(1.5-2.3)
Southern Sub-Saharan Africa	0.06	(0.04-0.08)	0.07	(0.05-0.09)	0.6	(0.5-0.6)
Tropical Latin America	0.01	(0-0.01)	0.01	(0.01-0.02)	2.3	(1.9-2.7)
Western Europe	0.19	(0.16-0.23)	0.33	(0.26-0.41)	1.8	(1.5-2)
Western Sub-Saharan Africa	0.04	(0.03-0.06)	0.05	(0.04-0.07)	0.8	(0.7-0.9)

Note. *UI: uncertain interval.

Supplementary Table S2. Global age-standardized mortality rates of *Clostridium difficile* diarrhea in men and women from 1990 to 2021

measure	location	sex	age	cause	rei	metric		val	upper	lower
Deaths	Global	Male	Age-standardized	Diarrheal diseases	Clostridium difficile	Rate	1990	0.100451004	0.119926968	0.083432148
Deaths	Global	Female	Age-standardized	Diarrheal diseases	Clostridium difficile	Rate	1990	0.091158877	0.109112276	0.07639599
Deaths	Global	Male	Age-standardized	Diarrheal diseases	Clostridium difficile	Rate	1991	0.102896032	0.121819621	0.086230073
Deaths	Global	Female	Age-standardized	Diarrheal diseases	Clostridium difficile	Rate	1991	0.096050525	0.114345235	0.081006535
Deaths	Global	Male	Age-standardized	Diarrheal diseases	Clostridium difficile	Rate	1992	0.109961169	0.129111112	0.092657313
Deaths	Global	Female	Age-standardized	Diarrheal diseases	Clostridium difficile	Rate	1992	0.100782045	0.119769713	0.085313568
Deaths	Global	Male	Age-standardized	Diarrheal diseases	Clostridium difficile	Rate	1993	0.114362006	0.13348223	0.097135576
Deaths	Global	Female	Age-standardized	Diarrheal diseases	Clostridium difficile	Rate	1993	0.103720944	0.122717615	0.088303532
Deaths	Global	Male	Age-standardized	Diarrheal diseases	Clostridium difficile	Rate	1994	0.114481938	0.134189336	0.097172785
Deaths	Global	Female	Age-standardized	Diarrheal diseases	Clostridium difficile	Rate	1994	0.104982578	0.123926517	0.089225004
Deaths	Global	Male	Age-standardized	Diarrheal diseases	Clostridium difficile	Rate	1995	0.109809529	0.129434774	0.092881766
Deaths	Global	Female	Age-standardized	Diarrheal diseases	Clostridium difficile	Rate	1995	0.106001164	0.12626407	0.089696104
Deaths	Global	Male	Age-standardized	Diarrheal diseases	Clostridium difficile	Rate	1996	0.107997531	0.127780068	0.091314238
Deaths	Global	Female	Age-standardized	Diarrheal diseases	Clostridium difficile	Rate	1996	0.106436718	0.126398831	0.090473171
Deaths	Global	Male	Age-standardized	Diarrheal diseases	Clostridium difficile	Rate	1997	0.110526041	0.130261288	0.09411397
Deaths	Global	Female	Age-standardized	Diarrheal diseases	Clostridium difficile	Rate	1997	0.108249641	0.128086621	0.09243719
Deaths	Global	Male	Age-standardized	Diarrheal diseases	Clostridium difficile	Rate	1998	0.117851577	0.139089966	0.100475363
Deaths	Global	Female	Age-standardized	Diarrheal diseases	Clostridium difficile	Rate	1998	0.112028259	0.132636298	0.095931274
Deaths	Global	Male	Age-standardized	Diarrheal diseases	Clostridium difficile	Rate	1999	0.132390687	0.15586815	0.113081923
Deaths	Global	Female	Age-standardized	Diarrheal diseases	Clostridium difficile	Rate	1999	0.127598539	0.150594219	0.109723224
Deaths	Global	Male	Age-standardized	Diarrheal diseases	Clostridium difficile	Rate	2000	0.156083706	0.183442678	0.132896862
Deaths	Global	Female	Age-standardized	Diarrheal diseases	Clostridium difficile	Rate	2000	0.15019829	0.177369247	0.128050906
Deaths	Global	Male	Age-standardized	Diarrheal diseases	Clostridium difficile	Rate	2001	0.1676139	0.196999897	0.142390833
Deaths	Global	Female	Age-standardized	Diarrheal diseases	Clostridium difficile	Rate	2001	0.16105584	0.189322991	0.137247992
Deaths	Global	Male	Age-standardized	Diarrheal diseases	Clostridium difficile	Rate	2002	0.178040434	0.209185422	0.151314716
Deaths	Global	Female	Age-standardized	Diarrheal diseases	Clostridium difficile	Rate	2002	0.171214939	0.200594463	0.146331411
Deaths	Global	Male	Age-standardized	Diarrheal diseases	Clostridium difficile	Rate	2003	0.183086903	0.216186234	0.155556824

Deaths	Global	Female	Age-standardized	Diarrheal diseases	Clostridium difficile	Rate	2003	0.179616798	0.210572299	0.153171205
Deaths	Global	Male	Age-standardized	Diarrheal diseases	Clostridium difficile	Rate	2004	0.188973125	0.225910809	0.160426533
Deaths	Global	Female	Age-standardized	Diarrheal diseases	Clostridium difficile	Rate	2004	0.183425555	0.218404494	0.155629134
Deaths	Global	Male	Age-standardized	Diarrheal diseases	Clostridium difficile	Rate	2005	0.201830712	0.244028822	0.16910319
Deaths	Global	Female	Age-standardized	Diarrheal diseases	Clostridium difficile	Rate	2005	0.19361106	0.233875502	0.162633768
Deaths	Global	Male	Age-standardized	Diarrheal diseases	Clostridium difficile	Rate	2006	0.21452192	0.260828355	0.179145541
Deaths	Global	Female	Age-standardized	Diarrheal diseases	Clostridium difficile	Rate	2006	0.20651348	0.249627662	0.172806114
Deaths	Global	Male	Age-standardized	Diarrheal diseases	Clostridium difficile	Rate	2007	0.220494642	0.268200806	0.184232829
Deaths	Global	Female	Age-standardized	Diarrheal diseases	Clostridium difficile	Rate	2007	0.210702885	0.255394368	0.17608159
Deaths	Global	Male	Age-standardized	Diarrheal diseases	Clostridium difficile	Rate	2008	0.221758268	0.269926886	0.185491308
Deaths	Global	Female	Age-standardized	Diarrheal diseases	Clostridium difficile	Rate	2008	0.211591135	0.256265179	0.176743682
Deaths	Global	Male	Age-standardized	Diarrheal diseases	Clostridium difficile	Rate	2009	0.216601326	0.26316256	0.181194839
Deaths	Global	Female	Age-standardized	Diarrheal diseases	Clostridium difficile	Rate	2009	0.203954429	0.247383286	0.170299199
Deaths	Global	Male	Age-standardized	Diarrheal diseases	Clostridium difficile	Rate	2010	0.213615312	0.259921349	0.178873229
Deaths	Global	Female	Age-standardized	Diarrheal diseases	Clostridium difficile	Rate	2010	0.19987585	0.242435917	0.166683252
Deaths	Global	Male	Age-standardized	Diarrheal diseases	Clostridium difficile	Rate	2011	0.21482699	0.260432626	0.180456795
Deaths	Global	Female	Age-standardized	Diarrheal diseases	Clostridium difficile	Rate	2011	0.201783873	0.243603412	0.169052339
Deaths	Global	Male	Age-standardized	Diarrheal diseases	Clostridium difficile	Rate	2012	0.216566667	0.261410819	0.18215845
Deaths	Global	Female	Age-standardized	Diarrheal diseases	Clostridium difficile	Rate	2012	0.203729383	0.244927087	0.171070672
Deaths	Global	Male	Age-standardized	Diarrheal diseases	Clostridium difficile	Rate	2013	0.216911674	0.260465128	0.18244086
Deaths	Global	Female	Age-standardized	Diarrheal diseases	Clostridium difficile	Rate	2013	0.203280418	0.244066536	0.170896544
Deaths	Global	Male	Age-standardized	Diarrheal diseases	Clostridium difficile	Rate	2014	0.217823521	0.261223489	0.183348149
Deaths	Global	Female	Age-standardized	Diarrheal diseases	Clostridium difficile	Rate	2014	0.199574795	0.23870899	0.168078504
Deaths	Global	Male	Age-standardized	Diarrheal diseases	Clostridium difficile	Rate	2015	0.220517257	0.264973224	0.185364052
Deaths	Global	Female	Age-standardized	Diarrheal diseases	Clostridium difficile	Rate	2015	0.200753699	0.239783576	0.169098125
Deaths	Global	Male	Age-standardized	Diarrheal diseases	Clostridium difficile	Rate	2016	0.220332704	0.261933935	0.186172532
Deaths	Global	Female	Age-standardized	Diarrheal diseases	Clostridium difficile	Rate	2016	0.200851349	0.238471345	0.170494824
Deaths	Global	Male	Age-standardized	Diarrheal diseases	Clostridium difficile	Rate	2017	0.219981578	0.260475555	0.187224549
Deaths	Global	Female	Age-standardized	Diarrheal diseases	Clostridium difficile	Rate	2017	0.201134052	0.237687017	0.17094225

Deaths	Global	Male	Age-standardized	Diarrheal diseases	Clostridium difficile	Rate	2018	0.21603958	0.256000388	0.184408418
Deaths	Global	Female	Age-standardized	Diarrheal diseases	Clostridium difficile	Rate	2018	0.195467316	0.230442885	0.166586062
Deaths	Global	Male	Age-standardized	Diarrheal diseases	Clostridium difficile	Rate	2019	0.208692557	0.246426823	0.177814166
Deaths	Global	Female	Age-standardized	Diarrheal diseases	Clostridium difficile	Rate	2019	0.184961328	0.217732049	0.158314067
Deaths	Global	Male	Age-standardized	Diarrheal diseases	Clostridium difficile	Rate	2020	0.207142238	0.24477588	0.176162002
Deaths	Global	Female	Age-standardized	Diarrheal diseases	Clostridium difficile	Rate	2020	0.182623533	0.216314257	0.156535129
Deaths	Global	Male	Age-standardized	Diarrheal diseases	Clostridium difficile	Rate	2021	0.207785941	0.244942023	0.176661109
Deaths	Global	Female	Age-standardized	Diarrheal diseases	Clostridium difficile	Rate	2021	0.182676376	0.214469576	0.156029386

Global *Clostridium difficile* diarrhea mortality data from 1990 to 2021 were analyzed by t test for male and female data:

	sex	case	Mean	SD	Standard error mean
val	Male	32	0.176562	0.0470585	0.0083189
	Fema	32	0.165175	0.0431491	0.0076278

		Levene's test		Student's t-test			95% CI*		
		F	Sig.	t	df	Sig. (2-tailed)	Mean difference	Standard error difference	Lower Upper
val	Equal variances assumed	0.632	0.430	1.009	62	0.317	0.0113863	0.0112865	-0.0111751 0.0339478
	Equal variances not assumed			1.009	61.539	0.317	0.0113863	0.0112865	-0.0111785 0.0339512

Note. *CI: confidence interval. Results: $t = 1.009$ $P = 0.317$

Supplementary Table S3. Mortality rate of *Clostridium difficile* diarrhea in 1990 and 2021 in 204 countries and territories, with AAPC from 1990 to 2021

Location	Rate_1990_95UI*	Rate_2021_95UI	AAPC_95UI
Afghanistan	0.01(0.01-0.02)	0.02(0.01-0.03)	0.8(0.4-1.3)
Albania	0.24(0.17-0.31)	0.21(0.12-0.31)	0(-0.5-0.7)
Algeria	0.02(0.01-0.03)	0.03(0.02-0.04)	1.2(1.2-1.2)
American Samoa	0.03(0.02-0.05)	0.04(0.02-0.05)	0.2(0.2-0.3)
Andorra	0.1(0.05-0.15)	0.08(0.04-0.13)	-0.8(-0.9--0.6)
Angola	0.04(0.02-0.05)	0.05(0.04-0.08)	1.1(1-1.1)
Antigua and Barbuda	0.01(0.01-0.02)	0.01(0.01-0.02)	0.8(0.6-1)
Argentina	0.05(0.03-0.07)	0.05(0.04-0.08)	0.5(0.2-0.8)
Armenia	0.03(0.02-0.04)	0.04(0.03-0.05)	1(0.5-1.6)
Australia	0.13(0.1-0.18)	0.18(0.14-0.22)	1.3(0.7-1.8)
Austria	0.13(0.11-0.15)	0.35(0.29-0.42)	3(2.6-3.2)
Azerbaijan	0.05(0.03-0.07)	0.06(0.05-0.09)	0.8(0.7-0.8)
Bahamas	0.01(0.01-0.02)	0.01(0.01-0.02)	0.4(0.3-0.6)
Bahrain	0.02(0.01-0.03)	0.03(0.02-0.04)	1.2(1.1-1.2)
Bangladesh	0.02(0.01-0.03)	0.02(0.01-0.03)	1(0.9-1)
Barbados	0.01(0.01-0.02)	0.01(0.01-0.02)	0.6(0.4-0.8)
Belarus	0.08(0.07-0.1)	0.07(0.05-0.08)	-0.7(-1--0.3)
Belgium	0.23(0.17-0.3)	0.29(0.22-0.37)	0.8(0.5-1)
Belize	0.01(0-0.01)	0.01(0.01-0.02)	1.2(1-1.4)
Benin	0.04(0.02-0.05)	0.04(0.03-0.06)	0.7(0.6-0.7)
Bermuda	0.01(0.01-0.02)	0.01(0.01-0.02)	0.9(0.7-1)
Bhutan	0.02(0.01-0.02)	0.02(0.01-0.04)	1.4(1.3-1.4)
Bolivia (Plurinational State of)	0.01(0.01-0.02)	0.01(0.01-0.02)	0.7(0.6-0.9)
Bosnia and Herzegovina	0.23(0.17-0.3)	0.27(0.12-0.42)	0.6(0.4-0.7)
Botswana	0.05(0.03-0.07)	0.07(0.05-0.09)	1.1(0.9-1.3)
Brazil	0.01(0-0.01)	0.01(0.01-0.02)	2.3(1.9-2.7)

Location	Rate_1990_95UI*	Rate_2021_95UI	AAPC_95UI
Brunei Darussalam	0.22(0.17-0.29)	0.26(0.2-0.33)	0.5(0.4-0.6)
Bulgaria	0.15(0.14-0.17)	0.39(0.3-0.49)	3.3(2.9-3.6)
Burkina Faso	0.03(0.02-0.05)	0.04(0.03-0.06)	0.8(0.7-0.9)
Burundi	0.04(0.02-0.05)	0.04(0.03-0.06)	0.4(0.4-0.5)
Cabo Verde	0.03(0.02-0.05)	0.05(0.03-0.07)	1.4(1-1.6)
Cambodia	0.02(0.01-0.03)	0.02(0.01-0.03)	0.2(0.2-0.3)
Cameroon	0.04(0.03-0.06)	0.05(0.04-0.07)	0.8(0.7-0.8)
Canada	0.24(0.21-0.26)	0.69(0.54-0.84)	3.8(3.6-3.9)
Central African Republic	0.04(0.02-0.06)	0.04(0.03-0.06)	0.4(0.4-0.5)
Chad	0.03(0.02-0.05)	0.04(0.03-0.06)	0.7(0.6-0.7)
Chile	0.12(0.09-0.15)	0.26(0.21-0.32)	2.6(2.2-3.1)
China	0.02(0.01-0.02)	0.02(0.01-0.03)	0.6(0.5-0.7)
Colombia	0.03(0.02-0.04)	0.04(0.02-0.05)	0.5(0.3-0.7)
Comoros	0.04(0.02-0.05)	0.05(0.03-0.07)	0.7(0.5-0.9)
Congo	0.05(0.03-0.07)	0.06(0.04-0.08)	0.8(0.7-0.9)
Cook Islands	0.03(0.02-0.05)	0.04(0.02-0.05)	0.6(0.6-0.6)
Costa Rica	0.03(0.02-0.04)	0.03(0.02-0.05)	1(0.8-1.2)
Côte d'Ivoire	0.04(0.03-0.06)	0.05(0.03-0.07)	0.7(0.7-0.8)
Croatia	0.2(0.18-0.22)	0.37(0.28-0.47)	2.2(1.8-2.5)
Cuba	0.01(0.01-0.01)	0.01(0.01-0.02)	0.4(0-0.8)
Cyprus	0.22(0.17-0.29)	0.29(0.23-0.38)	1(0.9-1)
Czechia	0.27(0.22-0.32)	0.39(0.3-0.5)	0.8(0.1-1.3)
Democratic People's Republic of Korea	0.03(0.02-0.04)	0.04(0.03-0.06)	0.7(0.7-0.7)
Democratic Republic of the Congo	0.04(0.03-0.06)	0.04(0.03-0.06)	0.4(0.3-0.5)
Denmark	0.24(0.18-0.31)	0.31(0.24-0.39)	0.8(0.6-1.1)
Djibouti	0.04(0.03-0.06)	0.05(0.03-0.07)	0.7(0.6-0.8)
Dominica	0.01(0.01-0.01)	0.01(0.01-0.02)	1.1(1-1.1)

Location	Rate_1990_95UI*	Rate_2021_95UI	AAPC_95UI
Dominican Republic	0.01(0-0.01)	0.01(0.01-0.02)	1(0.9-1.2)
Ecuador	0.01(0-0.01)	0.02(0.01-0.03)	3(2.5-3.6)
Egypt	0.02(0.01-0.03)	0.03(0.02-0.04)	1.4(1.4-1.5)
El Salvador	0.02(0.02-0.04)	0.03(0.02-0.05)	0.9(0.8-0.9)
Equatorial Guinea	0.04(0.02-0.05)	0.07(0.05-0.09)	1.9(1.9-2)
Eritrea	0.04(0.02-0.05)	0.05(0.03-0.07)	0.8(0.8-0.8)
Estonia	0.09(0.07-0.11)	0.06(0.05-0.07)	-1.1(-1.3--0.8)
Eswatini	0.05(0.03-0.07)	0.06(0.04-0.09)	0.8(0.8-0.8)
Ethiopia	0.03(0.02-0.05)	0.04(0.03-0.06)	1(1-1)
Fiji	0.03(0.02-0.04)	0.03(0.02-0.05)	0.4(0.3-0.4)
Finland	0.21(0.16-0.27)	0.28(0.21-0.36)	0.8(0.5-1.1)
France	0.22(0.16-0.29)	0.27(0.21-0.35)	0.5(0-0.8)
Gabon	0.05(0.03-0.07)	0.06(0.04-0.09)	0.9(0.8-0.9)
Gambia	0.04(0.02-0.05)	0.05(0.03-0.07)	0.8(0.7-0.9)
Georgia	0.08(0.05-0.1)	0.06(0.05-0.07)	-1.1(-1.6--0.4)
Germany	0.29(0.23-0.36)	0.45(0.35-0.56)	1.3(1.1-1.6)
Ghana	0.04(0.03-0.06)	0.06(0.04-0.08)	0.9(0.8-0.9)
Greece	0.06(0.05-0.07)	0.22(0.18-0.24)	4.2(4-4.4)
Greenland	0.73(0.59-0.9)	0.85(0.57-1.11)	0.5(0.4-0.6)
Grenada	0.01(0-0.01)	0.01(0.01-0.02)	1.7(1.4-2.1)
Guam	0.03(0.02-0.05)	0.04(0.03-0.05)	0.4(0.3-0.4)
Guatemala	0.02(0.02-0.04)	0.03(0.02-0.05)	0.9(0.6-1.2)
Guinea	0.03(0.02-0.05)	0.04(0.03-0.06)	0.8(0.8-0.9)
Guinea-Bissau	0.04(0.02-0.05)	0.05(0.03-0.07)	0.7(0.6-0.9)
Guyana	0.01(0.01-0.01)	0.01(0.01-0.02)	1.1(1-1.3)
Haiti	0.01(0-0.01)	0.01(0.01-0.02)	0.7(0.2-1.2)
Honduras	0.02(0.01-0.03)	0.03(0.02-0.04)	0.9(0.9-1)

Location	Rate_1990_95UI*	Rate_2021_95UI	AAPC_95UI
Hungary	0.22(0.19-0.25)	0.39(0.3-0.49)	1.9(1.5-2.4)
Iceland	0.14(0.1-0.19)	0.2(0.15-0.27)	1(0.7-1.2)
India	0.01(0.01-0.02)	0.02(0.01-0.03)	1.5(1.4-1.6)
Indonesia	0.02(0.01-0.03)	0.02(0.02-0.04)	0.3(0.2-0.4)
Iran (Islamic Republic of)	0.02(0.01-0.03)	0.03(0.02-0.04)	1.4(1.3-1.4)
Iraq	0.02(0.01-0.02)	0.03(0.02-0.04)	1.6(1.5-1.7)
Ireland	0.18(0.15-0.22)	0.26(0.2-0.32)	1.3(1-1.6)
Israel	0.22(0.16-0.29)	0.27(0.21-0.36)	0.6(0.4-0.9)
Italy	0.12(0.11-0.13)	0.32(0.25-0.41)	3.9(3-4.4)
Jamaica	0.01(0.01-0.01)	0.01(0.01-0.02)	1.1(0.8-1.4)
Japan	0.18(0.14-0.24)	0.21(0.16-0.27)	0.4(0.3-0.6)
Jordan	0.02(0.01-0.03)	0.03(0.02-0.04)	1.2(1.2-1.2)
Kazakhstan	0.05(0.04-0.07)	0.06(0.05-0.07)	0.6(0.3-0.9)
Kenya	0.04(0.03-0.06)	0.06(0.04-0.08)	0.7(0.6-0.8)
Kiribati	0.03(0.02-0.04)	0.03(0.02-0.04)	0.3(0.3-0.3)
Kuwait	0.02(0.01-0.03)	0.03(0.02-0.04)	1(0.2-1.7)
Kyrgyzstan	0.04(0.03-0.06)	0.05(0.04-0.06)	0.3(0-0.6)
Lao People's Democratic Republic	0.02(0.01-0.03)	0.02(0.01-0.03)	0.4(0.4-0.5)
Latvia	0.08(0.07-0.1)	0.06(0.05-0.07)	-0.7(-1.3-0.2)
Lebanon	0.02(0.01-0.02)	0.03(0.02-0.04)	1.5(1.4-1.6)
Lesotho	0.04(0.03-0.06)	0.06(0.04-0.08)	0.9(0.9-1)
Liberia	0.04(0.02-0.05)	0.04(0.03-0.06)	0.6(0.5-0.7)
Libya	0.02(0.01-0.03)	0.03(0.02-0.04)	1.1(1.1-1.2)
Lithuania	0.1(0.08-0.12)	0.13(0.1-0.15)	1.1(0.5-1.7)
Luxembourg	0.23(0.18-0.3)	0.29(0.22-0.38)	0.7(0.5-0.9)
Madagascar	0.04(0.03-0.05)	0.05(0.03-0.07)	0.6(0.5-0.6)
Malawi	0.04(0.02-0.05)	0.05(0.03-0.07)	0.9(0.8-0.9)

Location	Rate_1990_95UI*	Rate_2021_95UI	AAPC_95UI
Malaysia	0.02(0.01-0.04)	0.03(0.02-0.04)	0.3(0.3-0.4)
Maldives	0.02(0.01-0.03)	0.02(0.01-0.03)	0.9(0.9-1)
Mali	0.03(0.02-0.05)	0.04(0.03-0.06)	0.7(0.7-0.8)
Malta	0.12(0.11-0.14)	0.22(0.18-0.27)	1.9(1.7-2.1)
Marshall Islands	0.03(0.02-0.04)	0.03(0.02-0.04)	0.3(0.1-0.5)
Mauritania	0.04(0.03-0.06)	0.05(0.03-0.07)	0.8(0.7-0.8)
Mauritius	0.02(0.01-0.03)	0.02(0.02-0.04)	0.5(0-1)
Mexico	0.02(0.01-0.03)	0.03(0.02-0.05)	2.1(1.9-2.2)
Micronesia (Federated States of)	0.03(0.02-0.04)	0.03(0.02-0.05)	0.2(-0.1-0.4)
Monaco	0.11(0.06-0.2)	0.17(0.08-0.24)	1.4(1.4-1.4)
Mongolia	0.04(0.03-0.06)	0.03(0.02-0.04)	-1.4(-2.2--0.8)
Montenegro	0.05(0.02-0.08)	0.04(0.02-0.07)	0(-0.1-0.1)
Morocco	0.01(0.01-0.02)	0.02(0.01-0.03)	1.3(1.3-1.4)
Mozambique	0.03(0.02-0.05)	0.04(0.03-0.06)	1(0.9-1)
Myanmar	0.02(0.01-0.03)	0.02(0.01-0.03)	0.4(0.3-0.4)
Namibia	0.05(0.03-0.07)	0.06(0.04-0.09)	0.7(0.7-0.8)
Nauru	0.03(0.02-0.05)	0.03(0.02-0.05)	0.1(0.1-0.1)
Nepal	0.03(0.02-0.04)	0.03(0.02-0.04)	0.7(0.7-0.7)
Netherlands	0.15(0.1-0.19)	0.19(0.13-0.25)	0.7(0.5-1.1)
New Zealand	0.34(0.27-0.42)	0.44(0.37-0.53)	1.4(0.6-2.5)
Nicaragua	0.02(0.01-0.03)	0.03(0.02-0.04)	0.8(0.7-1)
Niger	0.03(0.02-0.04)	0.03(0.02-0.05)	0.4(0.3-0.4)
Nigeria	0.04(0.03-0.06)	0.06(0.04-0.08)	0.9(0.8-1)
Niue	0.03(0.02-0.04)	0.04(0.02-0.05)	0.4(0.4-0.5)
North Macedonia	0.29(0.23-0.38)	0.38(0.29-0.49)	0.9(0.8-1)
Northern Mariana Islands	0.04(0.02-0.05)	0.04(0.03-0.05)	0(0-0.1)
Norway	0.36(0.29-0.43)	0.92(0.74-1.13)	3.3(2.9-3.7)

Location	Rate_1990_95UI*	Rate_2021_95UI	AAPC_95UI
Oman	0.02(0.01-0.03)	0.03(0.02-0.05)	1.9(1.8-1.9)
Pakistan	0.02(0.01-0.03)	0.03(0.02-0.04)	1(0.9-1.1)
Palau	0.04(0.02-0.05)	0.04(0.03-0.06)	0.3(0.2-0.3)
Palestine	0.01(0.01-0.02)	0.02(0.01-0.03)	1.7(1.6-1.7)
Panama	0.03(0.02-0.04)	0.04(0.03-0.05)	0.6(0.3-0.9)
Papua New Guinea	0.02(0.01-0.03)	0.02(0.01-0.04)	0.4(0.3-0.4)
Paraguay	0.01(0.01-0.01)	0.01(0.01-0.02)	1.2(1.1-1.3)
Peru	0.01(0.01-0.02)	0.01(0.01-0.02)	0.4(0-0.6)
Philippines	0.03(0.02-0.04)	0.02(0.02-0.04)	-0.2(-0.2--0.1)
Poland	0.12(0.11-0.13)	0.39(0.32-0.5)	4.3(3.2-5.1)
Portugal	0.12(0.09-0.18)	0.17(0.12-0.23)	1.1(0.8-1.3)
Puerto Rico	0.01(0.01-0.02)	0.01(0.01-0.02)	1.1(0.9-1.3)
Qatar	0.02(0.02-0.03)	0.03(0.02-0.05)	1.2(1.1-1.3)
Republic of Korea	0.21(0.16-0.27)	0.26(0.19-0.33)	0.6(0.6-0.7)
Republic of Moldova	0.11(0.08-0.15)	0.1(0.08-0.13)	-0.1(-0.4-0.4)
Romania	0.2(0.18-0.22)	0.39(0.3-0.5)	2.1(1.6-2.5)
Russian Federation	0.12(0.09-0.15)	0.12(0.1-0.14)	0.5(0.2-0.9)
Rwanda	0.04(0.03-0.05)	0.05(0.03-0.07)	0.8(0.6-1.1)
Saint Kitts and Nevis	0.01(0.01-0.02)	0.01(0.01-0.02)	1.1(0.8-1.4)
Saint Lucia	0.01(0.01-0.01)	0.01(0.01-0.02)	1.1(1-1.4)
Saint Vincent and the Grenadines	0.01(0-0.01)	0.01(0.01-0.02)	1(0.8-1.2)
Samoa	0.03(0.02-0.04)	0.03(0.02-0.04)	0.3(0.3-0.3)
San Marino	0.13(0.09-0.19)	0.09(0.04-0.15)	-1.2(-1.6--1)
Sao Tome and Principe	0.04(0.03-0.06)	0.05(0.04-0.07)	1.1(1-1.2)
Saudi Arabia	0.02(0.01-0.03)	0.03(0.02-0.05)	1.8(1.7-1.8)
Senegal	0.04(0.02-0.05)	0.05(0.03-0.07)	0.9(0.8-1)
Serbia	0.2(0.13-0.28)	0.24(0.1-0.39)	0.7(0.6-0.7)

Location	Rate_1990_95UI*	Rate_2021_95UI	AAPC_95UI
Seychelles	0.02(0.02-0.04)	0.03(0.02-0.04)	0.1(0-0.2)
Sierra Leone	0.04(0.02-0.05)	0.04(0.03-0.07)	0.6(0.6-0.7)
Singapore	0.2(0.15-0.26)	0.23(0.18-0.29)	0.6(0.3-0.8)
Slovakia	0.14(0.08-0.22)	0.14(0.06-0.23)	0(-0.1-0)
Slovenia	0.09(0.07-0.1)	0.28(0.24-0.33)	4.1(3.6-4.6)
Solomon Islands	0.02(0.01-0.03)	0.02(0.01-0.04)	0.4(0.3-0.4)
Somalia	0.03(0.02-0.04)	0.03(0.02-0.04)	0.1(0-0.1)
South Africa	0.06(0.04-0.08)	0.07(0.05-0.1)	0.5(0.5-0.6)
South Sudan	0.04(0.02-0.05)	0.04(0.02-0.06)	0.3(0.2-0.3)
Spain	0.21(0.16-0.26)	0.3(0.25-0.37)	1.3(1.1-1.5)
Sri Lanka	0.02(0.01-0.03)	0.02(0.01-0.03)	0.2(0.1-0.2)
Sudan	0.01(0.01-0.02)	0.02(0.01-0.03)	1.8(1.6-2)
Suriname	0.01(0.01-0.01)	0.01(0.01-0.02)	0.6(0.5-0.7)
Sweden	0.16(0.14-0.18)	0.66(0.52-0.83)	5(4.5-5.4)
Switzerland	0.23(0.18-0.3)	0.29(0.22-0.37)	0.8(0.5-1.1)
Syrian Arab Republic	0.02(0.01-0.02)	0.02(0.02-0.04)	1.5(1.5-1.6)
Taiwan (Province of China)	0.07(0.05-0.1)	0.11(0.09-0.14)	1.5(1.2-2)
Tajikistan	0.04(0.03-0.06)	0.05(0.04-0.08)	0.7(0.6-0.8)
Thailand	0.02(0.01-0.03)	0.02(0.01-0.03)	0.2(0.1-0.2)
Timor-Leste	0.02(0.01-0.02)	0.02(0.01-0.03)	0.6(0.5-0.7)
Togo	0.04(0.03-0.06)	0.05(0.03-0.07)	0.6(0.6-0.6)
Tokelau	0.03(0.02-0.04)	0.03(0.02-0.05)	0.5(0.5-0.6)
Tonga	0.02(0.02-0.04)	0.03(0.02-0.04)	0.5(0.5-0.6)
Trinidad and Tobago	0.01(0.01-0.02)	0.01(0.01-0.02)	1(0.8-1.1)
Tunisia	0.02(0.01-0.02)	0.02(0.02-0.04)	1.4(1.3-1.4)
Turkey	0.02(0.01-0.02)	0.02(0.02-0.03)	1.2(1.1-1.3)
Turkmenistan	0.05(0.03-0.07)	0.06(0.04-0.08)	1.1(0.7-1.5)

Location	Rate_1990_95UI*	Rate_2021_95UI	AAPC_95UI
Tuvalu	0.02(0.01-0.03)	0.03(0.02-0.04)	0.7(0.7-0.8)
Uganda	0.03(0.02-0.05)	0.05(0.03-0.07)	1.1(1-1.1)
Ukraine	0.06(0.05-0.08)	0.04(0.03-0.05)	-0.7(-2-1.1)
United Arab Emirates	0.02(0.01-0.03)	0.04(0.02-0.05)	1.5(1.3-1.7)
United Kingdom	0.1(0.09-0.11)	0.26(0.2-0.33)	3.5(3.1-3.8)
United Republic of Tanzania	0.04(0.03-0.06)	0.05(0.03-0.07)	0.8(0.8-0.8)
United States of America	0.18(0.16-0.19)	1.22(1.09-1.33)	6.3(6.1-6.4)
United States Virgin Islands	0.01(0.01-0.02)	0.01(0.01-0.02)	0.8(0.7-0.8)
Uruguay	0.08(0.06-0.11)	0.11(0.08-0.15)	0.9(0.7-1.2)
Uzbekistan	0.05(0.03-0.07)	0.05(0.04-0.06)	0.5(0.2-0.8)
Vanuatu	0.02(0.01-0.03)	0.03(0.02-0.04)	0.3(0.3-0.4)
Venezuela (Bolivarian Republic of)	0.03(0.02-0.04)	0.03(0.02-0.05)	0.3(0-0.6)
Viet Nam	0.02(0.01-0.03)	0.02(0.01-0.03)	0.5(0.4-0.5)
Yemen	0.01(0.01-0.02)	0.02(0.01-0.03)	1.5(1.3-1.8)
Zambia	0.04(0.03-0.06)	0.06(0.04-0.08)	0.9(0.9-1)
Zimbabwe	0.05(0.03-0.07)	0.05(0.04-0.08)	0.1(0-0.3)

Note. *UI: uncertain interval.

Supplementary Table S4. The APCs of the global mortality rate of *Clostridium difficile* Diarrhea from 1990 to 2021

Location	Model	Segment	Segment Start	Segment End	APC (%)	APC 95% Lower (%)	APC 95% Upper (%)	APC Significant (0 = No 1 = Yes)	Test Statistic	P-Value
Global	5	0	1990	1992	5.3	2.0	7.7	1	NA	0.000
Global	5	1	1992	1998	1.3	-0.1	13.3	0	NA	0.054
Global	5	2	1998	2001	13.9	3.9	15.3	1	NA	0.000
Global	5	3	2001	2007	4.0	-0.8	5.0	0	NA	0.062
Global	5	4	2007	2017	-0.3	-0.7	1,8	0	NA	0.354
Global	5	5	2017	2021	-2.0	-4.3	-0.9	1	NA	0.004

Supplementary Table S5. The AAPC of the global mortality rate of *Clostridium difficile* diarrhea from 1990 to 2021

Location	Joinpoint Model	AAPC Index	Start Obs	End Obs	AAPC (%)	AAPC C.I. Low	AAPC C.I. High	Statistically Significant (0 = No 1 = Yes)	Test Statistic	P-Value
Global	5	Full Range	1990	2021	2.3	2.1	2.4	1	NA	0.000